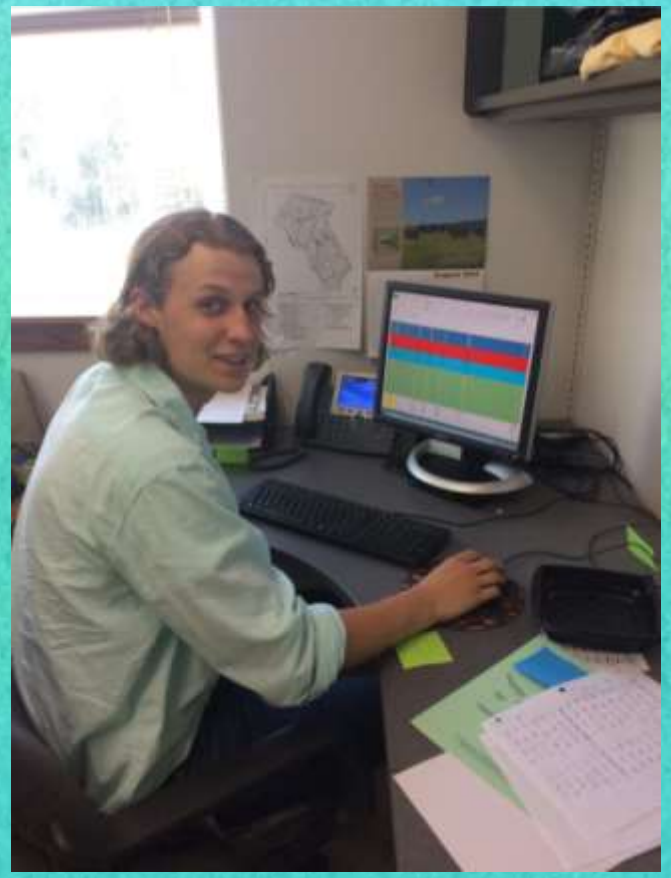
John Marshall SWCD Annual Awards Luncheon

December 19, 2017

John Marshall Soil and Water Conservation District
2017 Annual Awards Luncheon

Fauquier County Public Schools
Senior Government Internship



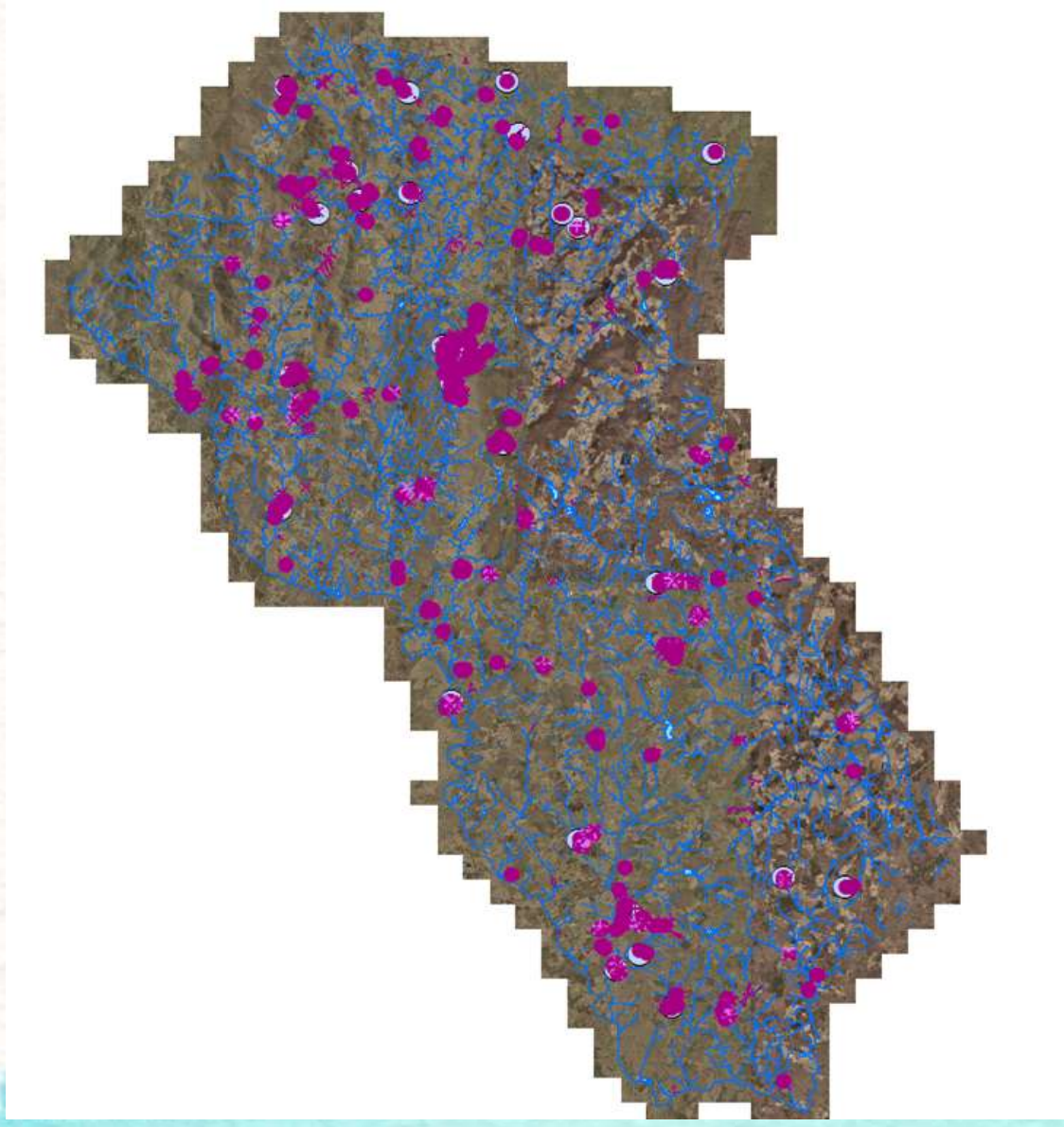
Water Quality Mapping

Project Summary - FCPS Internship Program

- School Course – Seniors.
- Places students in professional setting.
- Complete 120 hours.
- Students work to complete projects and present findings.
- Required to submit findings and experiences.

2016 John Marshall GIS Mapping

- As-Builts
  - Stream protection fences
  - Troughs
  - Pipelines
  - Stream crossings
  - Cross fences
  - Wells
  - Access control areas

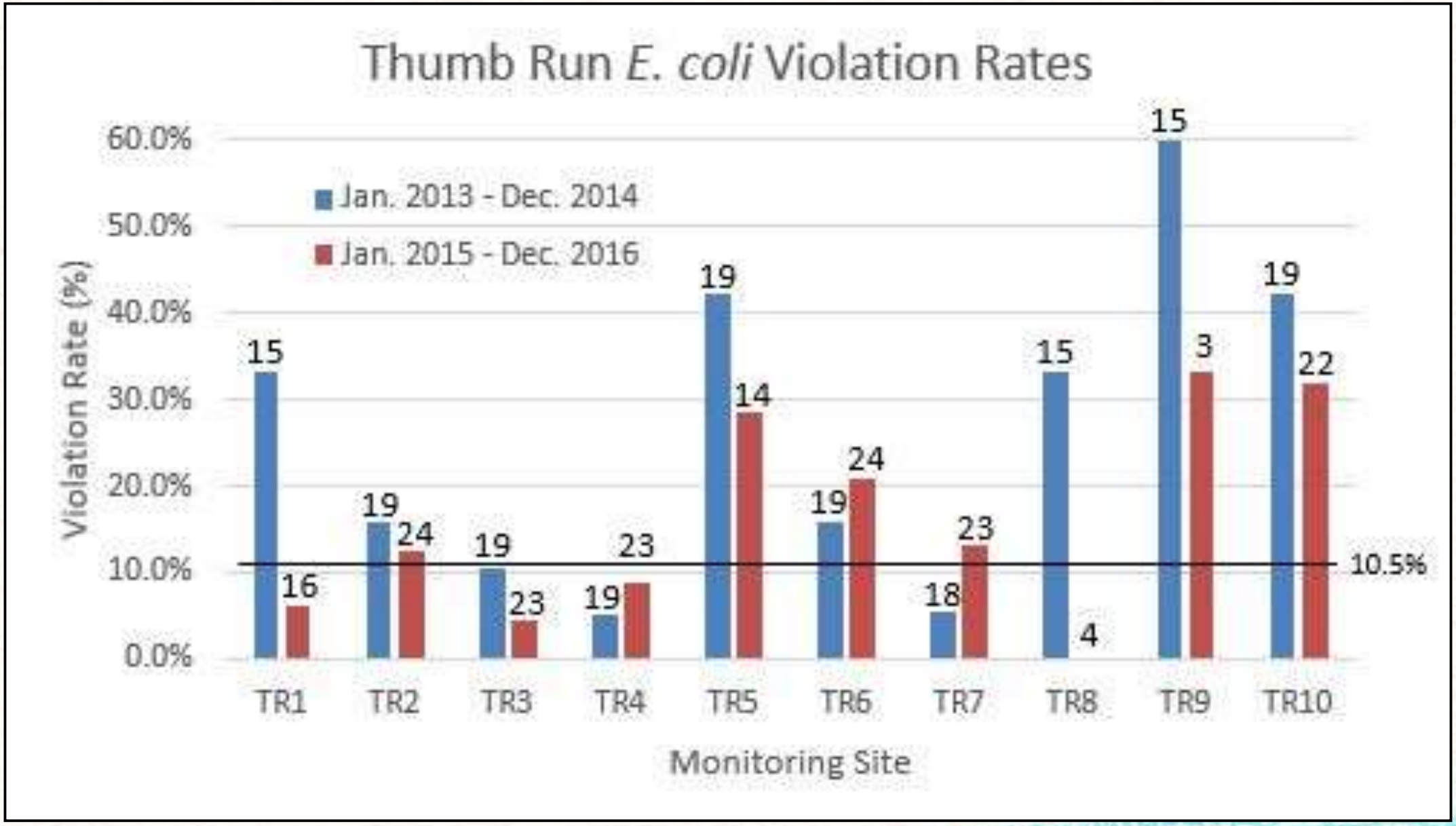


Project Summary – Water Quality Mapping

- JMSWCD Strategic Planning – Stakeholders wanted tangible evidence that BMPs work.
- Water monitoring demonstrates actual changes over time.
- Provides supporting data to demonstrate the accomplishments and effectiveness of JMSWCD programs.
- **GOAL:** Demostrate our acccomplisments – and make it easier to show local citizens and officials tangible results of their investments.

Water Quality Monitoring

- DEQ – Citizen Monitoring Network
  - Can be used to list and delist
- Many sources of nonpoint source pollution (not just agriculture)
- Many ways to monitor
  - Ultimately looking at trends
  - *E. coli* gives us a snapshot
    - Heavily influenced by rain events, drought, season, etc.
  - Macroinvertebrates give us a long-term perspective


Thumb Run E. coli Violation Rates
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
Violation Rate (%)
Jan. 2013 - Dec. 2014
Jan. 2015 - Dec. 2016
15
16
19
24
19
23
19
23
19
14
19
24
18
23
15
4
15
3
19
22
10.5%
TR1
TR2
TR3
TR4
TR5
TR6
TR7
TR8
TR9
TR10
Monitoring Site

History of the District Monitoring

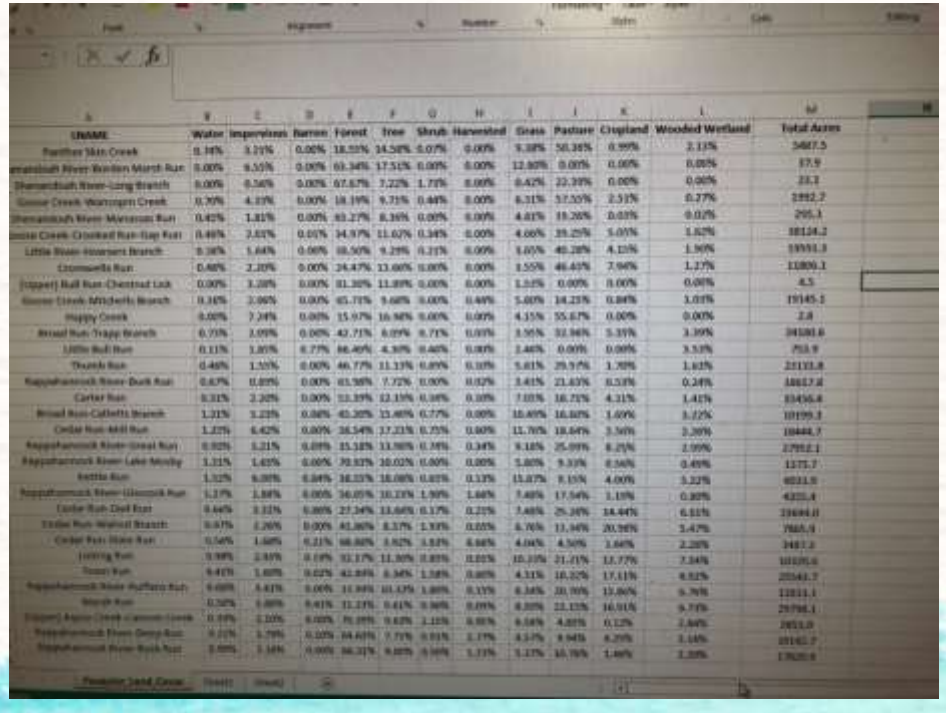
- District began monitoring in the early 2000's
- Expanded testing for chemical and macroinvertebrate
- Received TMDL grants for specific watersheds, allowed to begin monitoring *E. coli*

The Intern Program

- The internship program allows for students to make an impact at their department
- Inform others
- Making the records accessible

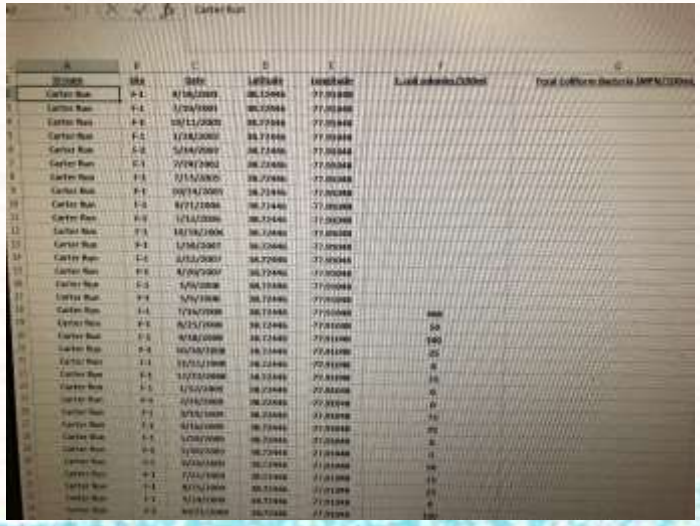
ArcMap

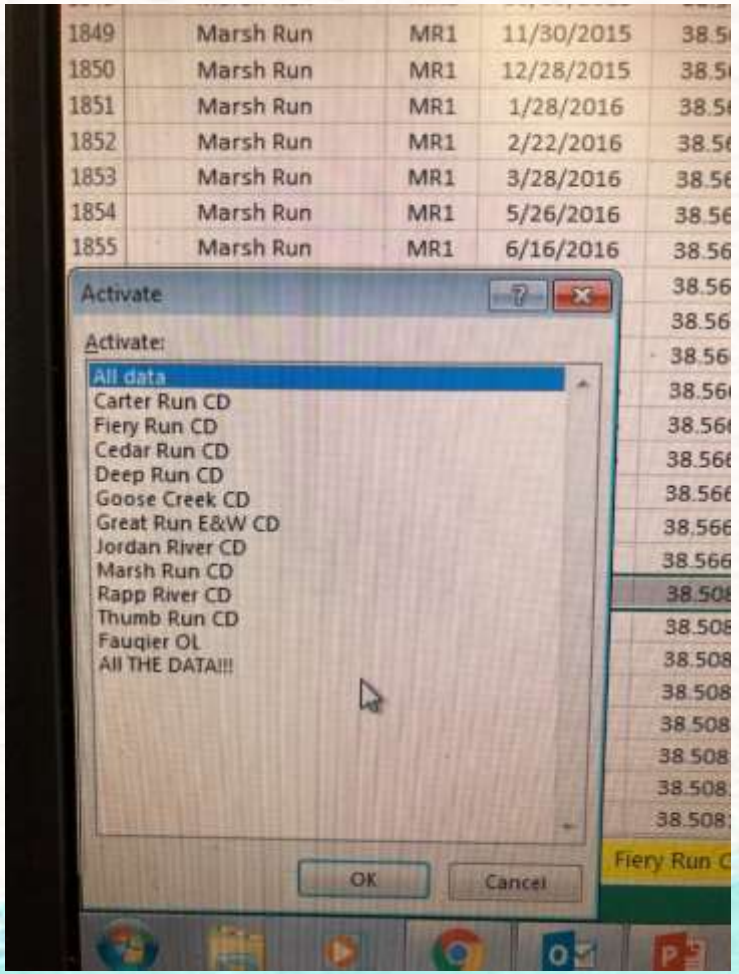
- ArcMap's GIS (Geographical Information System) program allowed us to analyze spatial layers to determine characteristics of the different watersheds in the county
- The program tags the information in the county, with the location it came from on a map

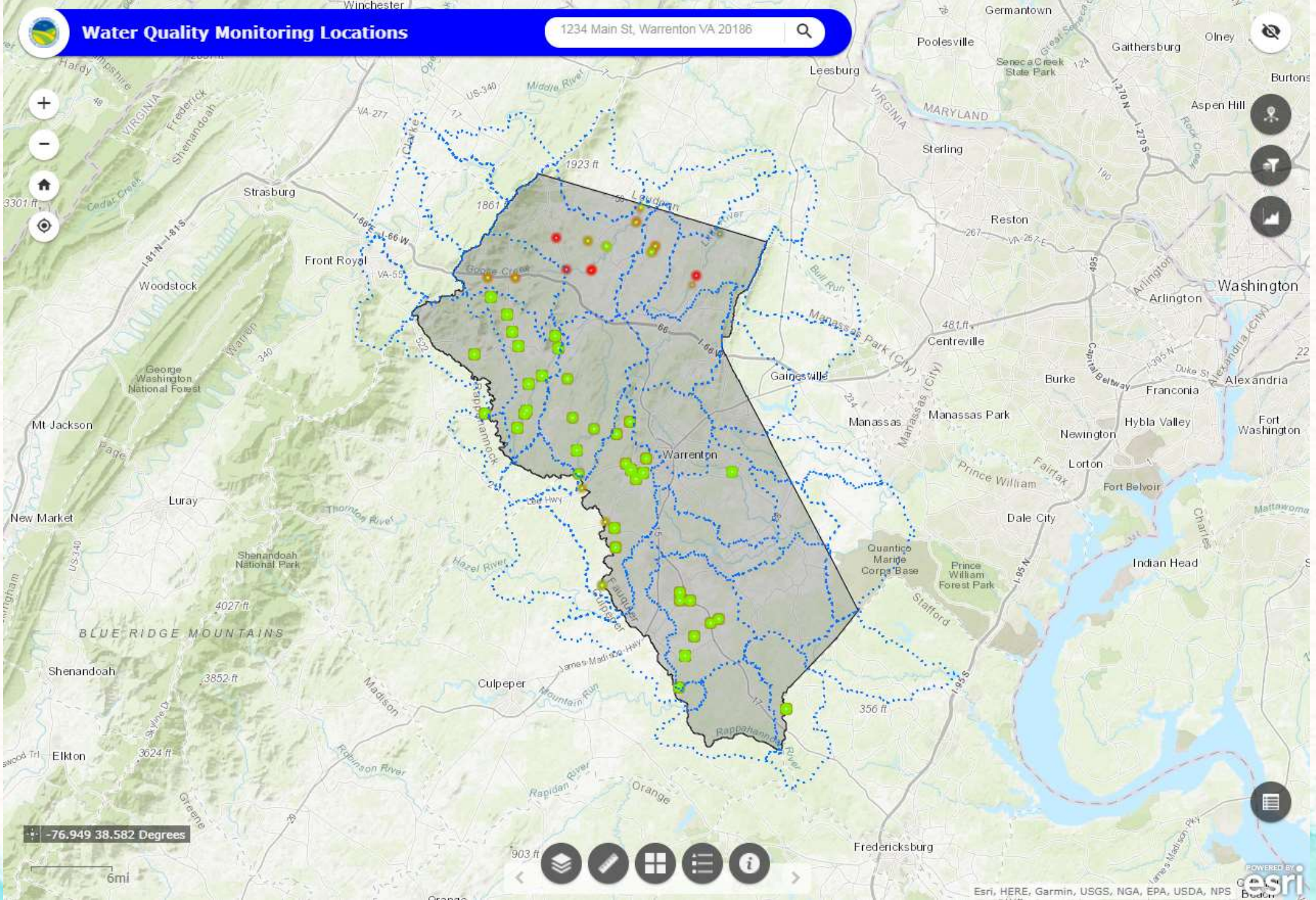


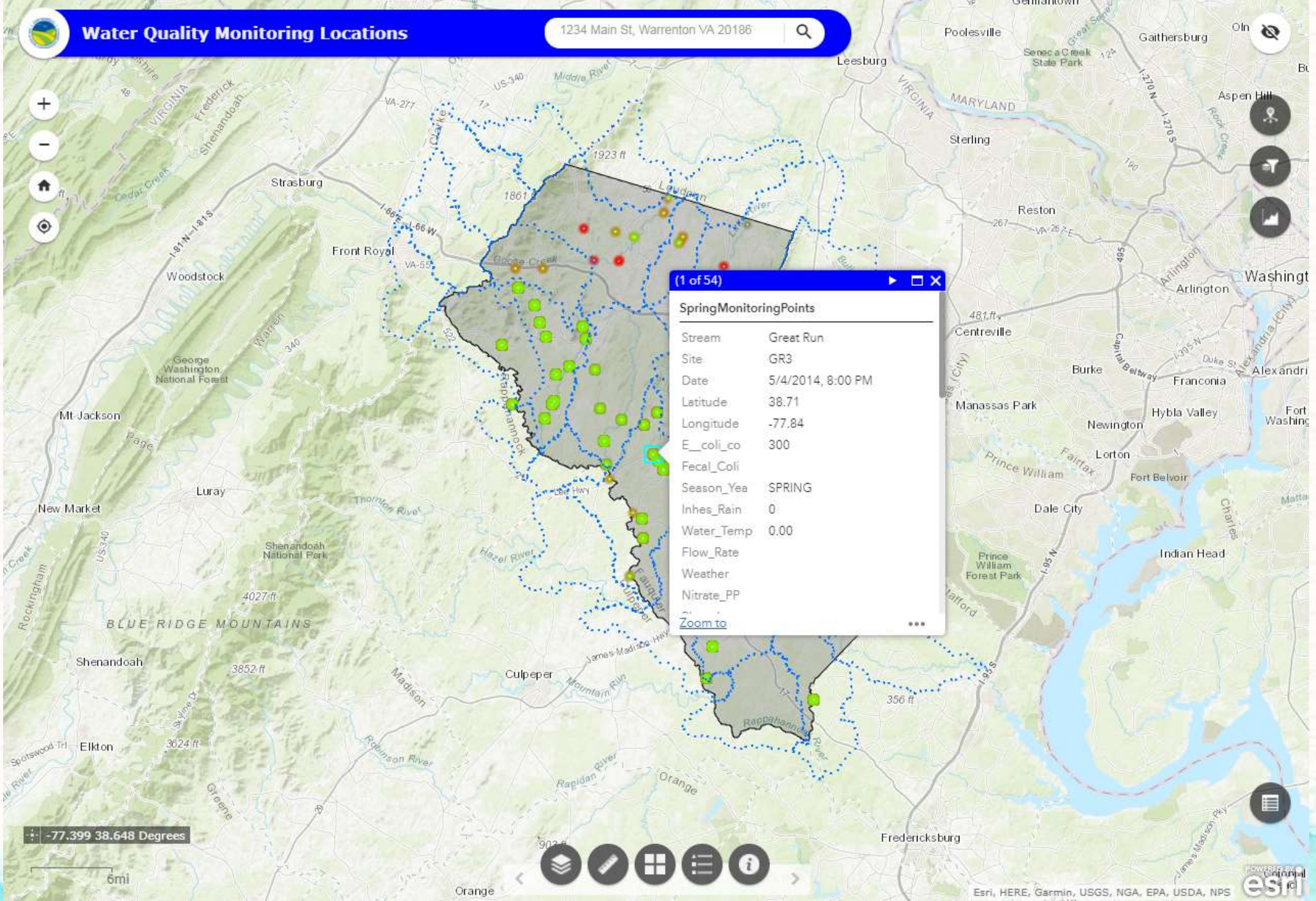
Creation of the Application

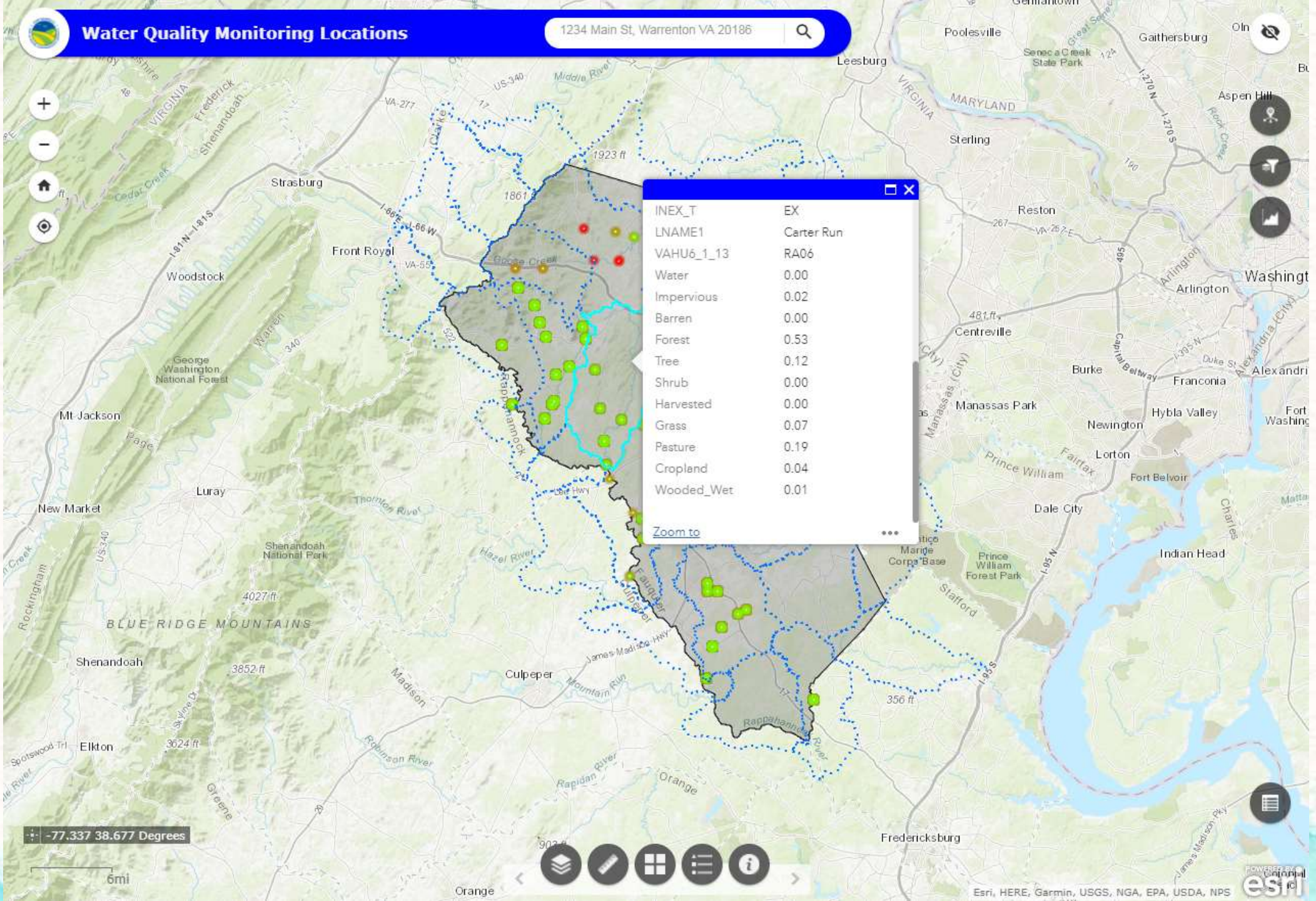
- The first step was to find any information that wasn't in the database already
  - Then all the spreadsheets needed to be combined into one
- formatting information-
  - Sites names
  - Converting DMS to decimal degrees
  - Checking coordinates with GIS to verify
  - Confirmed dates match with the paper copies
  - Sent spreadsheet to Dan Stell to put into ArcMap

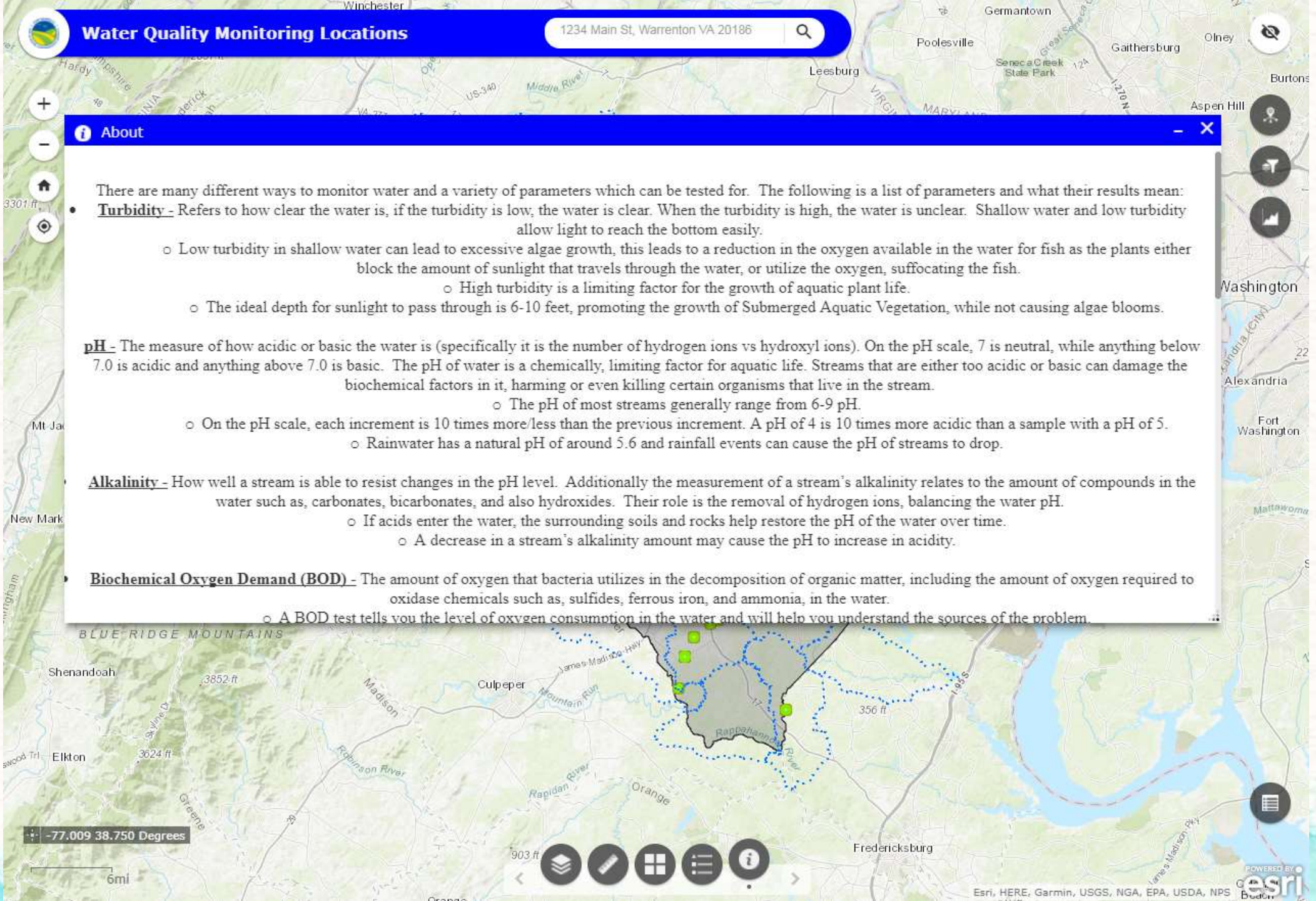


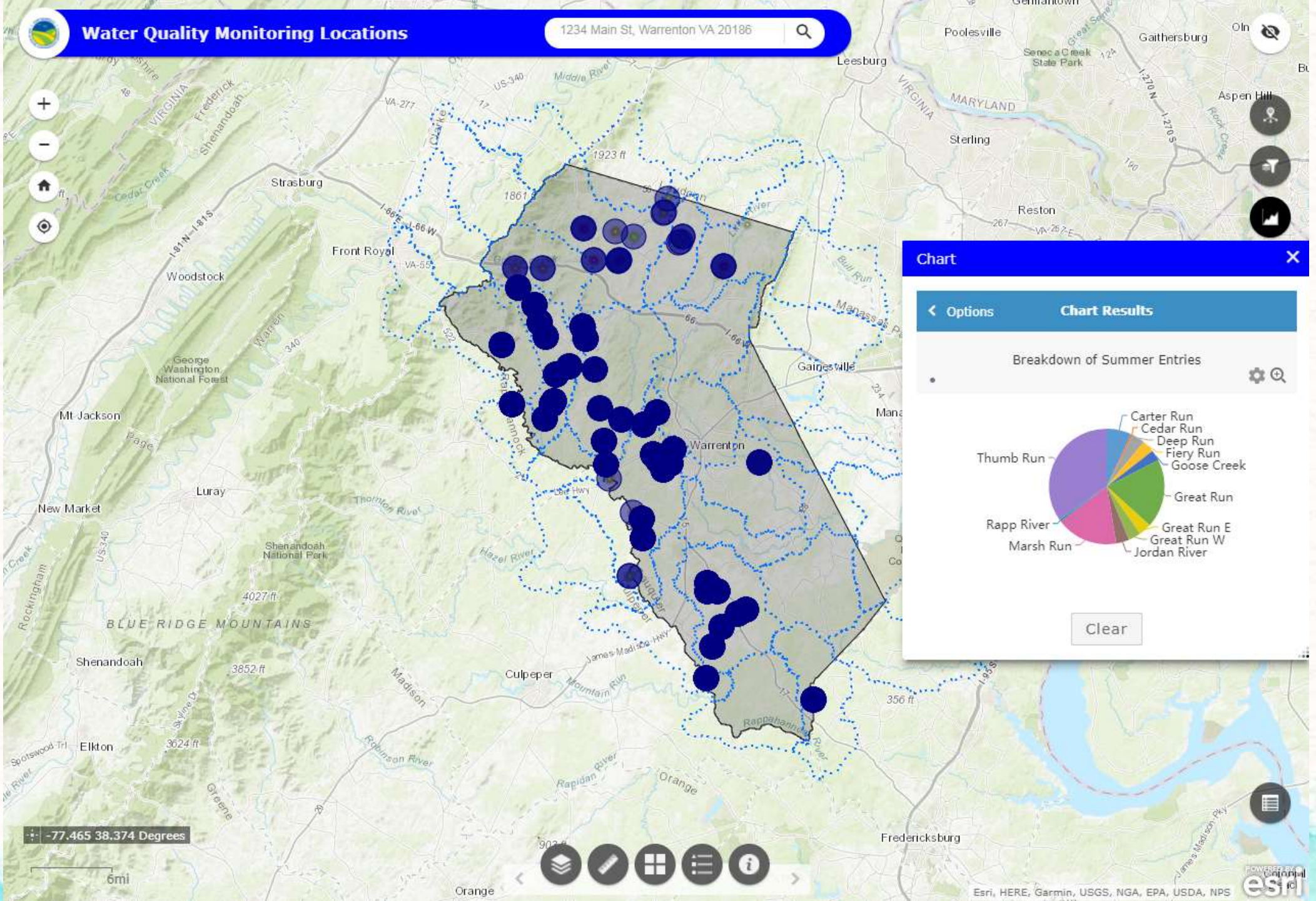


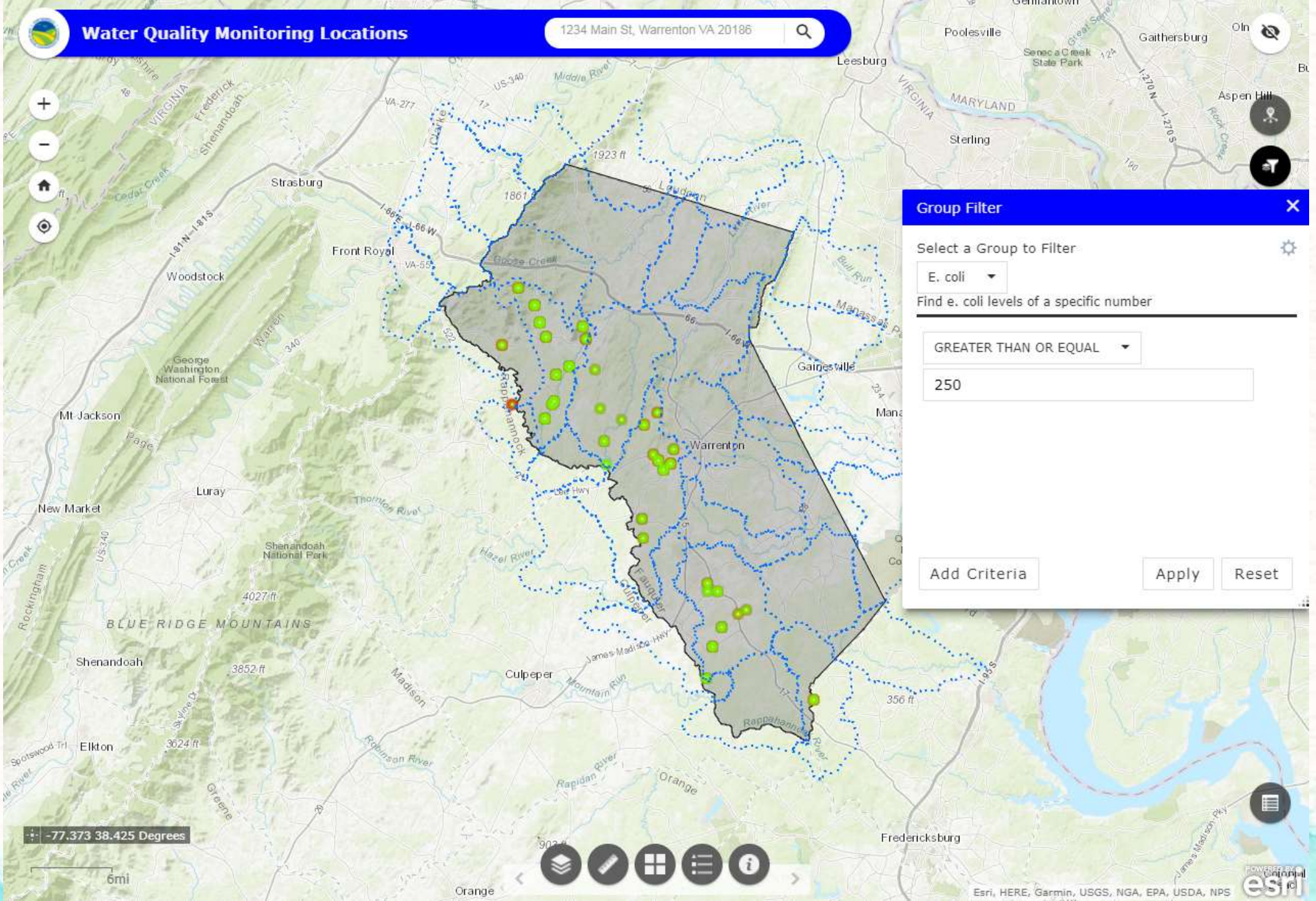

Water Quality Monitoring Locations
1234 Main St, Warrenton VA 20186
Winchester
Germantown
Poolesville
Gaithersburg
Olney
Leesburg
Seneca Creek State Park
Burtonsville
Aspen Hill
VIRGINIA
MARYLAND
Sterling
Reston
Strasburg
Front Royal
Woodstock
Washington
Arlington
Centreville
Gainesville
Burke
Franconia
Alexandria
Manassas
Manassas Park
Hybla Valley
Newington
Fort Washington
Warrenton
Lorton
Fort Belvoir
Dale City
Prince William Forest Park
Quantico Marine Corps Base
Indian Head
Mt Jackson
New Market
Luray
Shenandoah National Park
George Washington National Forest
BLUE RIDGE MOUNTAINS
Shenandoah
Culpeper
Elkton
Fredericksburg
Rappahannock River
Rapidan River
Hazel River
Thornton River
Mountain Run
Robinson River
Cedar Creek
Middle River
Goose Creek
Bull Run
Occoquan
Charles
Stafford
1923 ft
1861 ft
4027 ft
3852 ft
3624 ft
3301 ft
481 ft
356 ft
903 ft
-76.949 38.582 Degrees
6mi
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS
POWERED BY esri


Water Quality Monitoring Locations
1234 Main St, Warrenton VA 20186
(1 of 54)
SpringMonitoringPoints
Stream Great Run
Site GR3
Date 5/4/2014, 8:00 PM
Latitude 38.71
Longitude -77.84
E__coli_co 300
Fecal_Coli
Season_Yea SPRING
Inhes_Rain 0
Water_Temp 0.00
Flow_Rate
Weather
Nitrate_PP
Zoom to
-77.399 38.648 Degrees
6mi
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

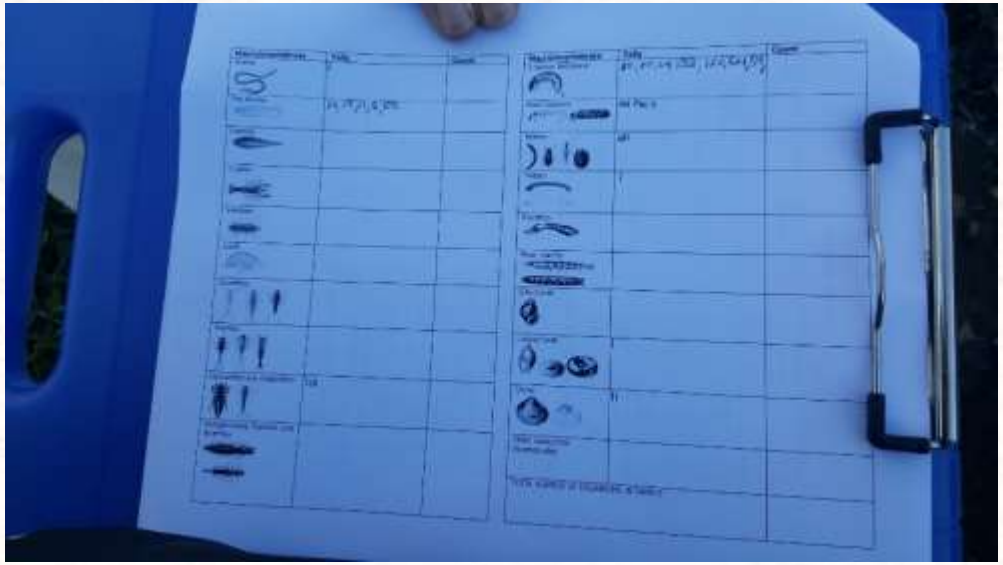

Water Quality Monitoring Locations
1234 Main St, Warrenton VA 20186
INEX_T EX
LNAME1 Carter Run
VAHU6_1_13 RA06
Water 0.00
Impervious 0.02
Barren 0.00
Forest 0.53
Tree 0.12
Shrub 0.00
Harvested 0.00
Grass 0.07
Pasture 0.19
Cropland 0.04
Wooded_Wet 0.01
Zoom to
-77.337 38.677 Degrees
6mi
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

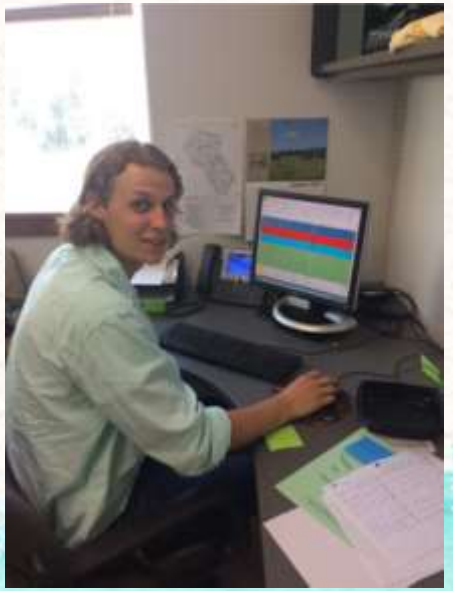

Water Quality Monitoring Locations
1234 Main St, Warrenton VA 20186
About
There are many different ways to monitor water and a variety of parameters which can be tested for. The following is a list of parameters and what their results mean:
Turbidity - Refers to how clear the water is, if the turbidity is low, the water is clear. When the turbidity is high, the water is unclear. Shallow water and low turbidity allow light to reach the bottom easily.
Low turbidity in shallow water can lead to excessive algae growth, this leads to a reduction in the oxygen available in the water for fish as the plants either block the amount of sunlight that travels through the water, or utilize the oxygen, suffocating the fish.
High turbidity is a limiting factor for the growth of aquatic plant life.
The ideal depth for sunlight to pass through is 6-10 feet, promoting the growth of Submerged Aquatic Vegetation, while not causing algae blooms.
pH - The measure of how acidic or basic the water is (specifically it is the number of hydrogen ions vs hydroxyl ions). On the pH scale, 7 is neutral, while anything below 7.0 is acidic and anything above 7.0 is basic. The pH of water is a chemically, limiting factor for aquatic life. Streams that are either too acidic or basic can damage the biochemical factors in it, harming or even killing certain organisms that live in the stream.
The pH of most streams generally range from 6-9 pH.
On the pH scale, each increment is 10 times more/less than the previous increment. A pH of 4 is 10 times more acidic than a sample with a pH of 5.
Rainwater has a natural pH of around 5.6 and rainfall events can cause the pH of streams to drop.
Alkalinity - How well a stream is able to resist changes in the pH level. Additionally the measurement of a stream's alkalinity relates to the amount of compounds in the water such as, carbonates, bicarbonates, and also hydroxides. Their role is the removal of hydrogen ions, balancing the water pH.
If acids enter the water, the surrounding soils and rocks help restore the pH of the water over time.
A decrease in a stream's alkalinity amount may cause the pH to increase in acidity.
Biochemical Oxygen Demand (BOD) - The amount of oxygen that bacteria utilizes in the decomposition of organic matter, including the amount of oxygen required to oxidase chemicals such as, sulfides, ferrous iron, and ammonia, in the water.
A BOD test tells you the level of oxygen consumption in the water and will help you understand the sources of the problem.
Winchester
Germantown
Poolesville
Gaithersburg
Olney
Leesburg
Seneca Creek State Park
Burtons
Aspen Hill
Washington
Alexandria
Fort Washington
Mattawoma
New Mark
Mt Ja
BLUE RIDGE MOUNTAINS
Shenandoah
3852 ft
Culpeper
James Madison Hwy
Mountain Run
Madison
Rappahannock River
356 ft
Elkton
3624 ft
Robinson River
Rapidan River
Orange
Greene
Fredericksburg
903 ft
-77.009 38.750 Degrees
6mi
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS


Water Quality Monitoring Locations
1234 Main St, Warrenton VA 20186
Chart
Options
Chart Results
Breakdown of Summer Entries
Carter Run
Cedar Run
Deep Run
Fiery Run
Goose Creek
Great Run
Great Run E
Great Run W
Jordan River
Marsh Run
Rapp River
Thumb Run
Clear
-77.465 38.374 Degrees
6mi
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS


Water Quality Monitoring Locations
1234 Main St, Warrenton VA 20186
Group Filter
Select a Group to Filter
E. coli
Find e. coli levels of a specific number
GREATER THAN OR EQUAL
250
Add Criteria
Apply
Reset
Warrenton
Culpeper
Front Royal
Strasburg
Woodstock
Mt Jackson
New Market
Luray
Shenandoah
Elkton
Leesburg
Gainesville
Fredericksburg
Sterling
Poolesville
Gaithersburg
Aspen Hill
BLUE RIDGE MOUNTAINS
-77.373 38.425 Degrees
6mi
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

Opportunity for Experience





The Impact

- The Water Quality Mapping Project allows the department to understand progress
- Help the community better understand the importance of soil and water conservation
- Ultimately reflect the role that the John Marshall Soil and Water Conservation District plays in the protection of our streams

John Marshall Soil and Water Conservation District
2017 Annual Awards Luncheon

Special Recognition

John Marshall Soil and Water Conservation District
2017 Annual Awards Luncheon

2017 Conservation Partner Award

Piedmont Environmental Council

Piedmont Environmental Council:

- Mission is *"**promoting and protecting the natural resources, rural economy, history and beauty of the Virginia Piedmont.**"*
- PEC works with the citizens of a nine-county region, including Fauquier, *"to conserve land, create high-quality communities, strengthen rural economies, celebrate historic resources, protect air and water quality, build smart transportation networks, promote sustainable energy choices, restore wildlife habitat, and improve people's access to nature."*

Thumb Run
Watershed Restoration Efforts

- Since 2012, with support from Volgenau Foundation, PEC has coordinated outreach and education activities in Thumb Run watershed, and funded the installation of water quality and habitat improvement projects. In collaboration with JMSWCD and other community partners:
  - Completed riparian buffer native plant installation projects
  - Conducted Annual Community Meetings
  - Sponsored Water Quality Monitors Training
  - Promoted Thumb Run TMDL Agricultural & Residential BMP cost-share opportunities

Upper Rappahannock River Watershed Stewardship Activities

Photo: Paula Combs

PEC is working to restore native brook trout habitat damaged by 1995/1996 flooding in cooperation with Friends of the Rappahannock, Trout Unlimited and other partners.

Through their extensive print and social media outlets, PEC consistently promotes stewardship opportunities that engage citizens with the river and its tributaries, which greatly enhances the success of collaborative events.

"From the Rappahannock, For the Rappahannock"
Celebration at Marriott Ranch

Since April 2015, PEC, John Marshall SWCD, and Friends of the Rappahannock have hosted a day long celebration of the conservation work that has been accomplished in the upper watershed, and its positive benefits to the aquatic and economic systems of the lower basin.

Stormwater Management Solutions

Virginia Conservation Assistance Program (VCAP) is a new urban / residential stormwater BMP program administered by VASWCD. Piedmont Environmental Council has enthusiastically promoted the effort throughout the region, and is responsible for initiating the first two project applications submitted to John Marshall SWCD. PEC staff are providing leadership for assisting the Town of Warrenton in addressing stormwater issues at Rady Park.

JOHN MARSHALL SWCD

recognizes

Piedmont Environmental Council

as an outstanding partner in conservation, who consistently promotes dialogue between organizations with similar goals, and works diligently to locate resources for citizens, landowners and agencies in their effort to address problems and enhance our shared environment.

Congratulations!

2017 Conservation Partner Award

John Marshall Soil and Water Conservation District
2017 Annual Awards Luncheon

2017 Edwin F. Gulick Conservation Educator Award

Jim Hankins

Fauquier Education Farm

Fauquier Education Farm

Beginning Farmer Program

THIS WORKSHOP WILL BE AT THE FAUQUIER EDUCATION FARM 8428 MEETZE RD WARRENTON, VA. 20186

The Fauquier Education Farm

Workshop Series

JULY 21ST, 2016, 6 TO 8 PM

ORGANIC PEST CONTROL

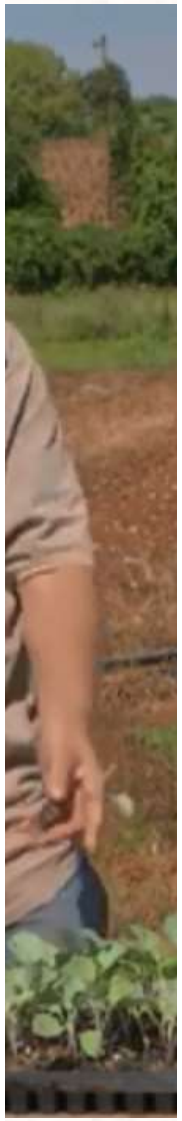
The Fauquier Education Farm would like to invite you to attend our workshop, Organic Pest Control. We will explore a variety of different methods available to growers who want to raise their vegetables organically. It's often far easier than you might suspect so come learn a few simple tricks to help ensure that you get to eat more out of your garden before the bugs do.

This program is free and open to the public.

Contact Jim Hankins Executive Director Fauquier Education Farm if you have any questions

540 533 6500

fauquieredfarm@gmail.com



Fauquier Education Farm
2017 Workshop Series

GROW YOUR OWN NUTRIENTS

MAY 25TH, 6 TO 8 PM

Your garden habits should build your soil nutrients and support healthy soil biodiversity. Come join us at the Education Farm as we explore using Cover Crops to increase soil health and produce higher yields of cash crops. We will discuss what types of cover crops you might grow, when to plant them and what benefits you should expect. We will review our on-going No-Till Demonstrations.

Build your soil naturally!

Guest Speaker...Casey Iames, Soil Conservationist, NRCS

VIRGINIA GROWN®

These workshops are proudly sponsored by Virginia Grown

THIS WORKSHOP IS FREE AND OPEN TO EVERYONE

No registration required

Fauquier Education Farm

8428 Meetze Rd. Warrenton

For more information

fauquieredfarm@gmail.com

540 336 4338

JOHN MARSHALL SWCD
recognizes

Jim Hankins

for his outstanding contribution to
education in Fauquier County.

Congratulations!

2017 Edwin F. Gulick Conservation Educator Award

John Marshall Soil and Water Conservation District
2017 Annual Awards Luncheon

2017 Conservation Contractor Award

Jason Payne

Crest Hill Landscaping LLC

Orlean, VA

2015 Gone Away Farm SL-6 Practices
Cromwell's Run Watershed

This practice included;

- 1,350 feet of stream protection fence,
- Two spring developments
- One stream crossing

Not an easy first project

"Did you say your company was called Crest Hill **Landscaping**??"

Following the Design is Essential for Success

Developing A Spring is Not An Easy First Time Project

Planning and Coordination help with Setting the Spring Box

Surveying and Cutting the Grade Requires Teamwork

Partnerships Produce the Best Results

2015 Selby Farm SL-6 Practice
Broad Run Watershed

This practice included;

- 6,100 feet of stream protection fence,
- A spring development
- Two stream crossings

However, the landowner was so happy with the stream crossings he decided against the spring development and it was never built.

This practice protected 8,500 Feet of stream bank, created 17 acres of Riparian Buffer.

2015 KD Farms SL-6 Practice
Town Run Watershed

This practice included;

- 1,500 feet of Fence
- 1,350 feet of pressurized pipeline
- 5 Frost Proof Troughs

This practice protected 1,500 Feet of stream bank, created 1.4 acres of Riparian Buffer

2015 Acorn Equine SL-6 Practice **Broad Run Watershed**

- Built 2,850 feet of High Tensile Coated Wire Fence
- This practice protected 9,800 feet of stream bank, created 24 acres of Riparian Buffer

2015 White Farm SL-6 Practice
Tributary to the Rappahannock Watershed

This practice included;

- 1,150 feet of stream protection fence
- 2 Frost Proof Troughs
- 850 feet of pressurized pipeline
- 1 Heavy Use Protection

This practice protected 800 feet of Streambank and created 1 acre of Riparian Buffer.

Crest Hill Landscaping's Conservation Accomplishments

- Built 12,950 feet of Stream Protection Fence
- Installed 2,680 Feet of Pipe and 7 Troughs
- 2 spring developments
- 4 stream crossings
- 100% landowner Satisfaction
- Cost Effective Practice Installation
- Maintained an Open, Positive Working Relationship with District Staff

JOHN MARSHALL SWCD

recognizes

Jason Payne – Crest Hill Landscaping LLC

for his outstanding cooperation in the installation of agricultural best management practices.

Congratulations!

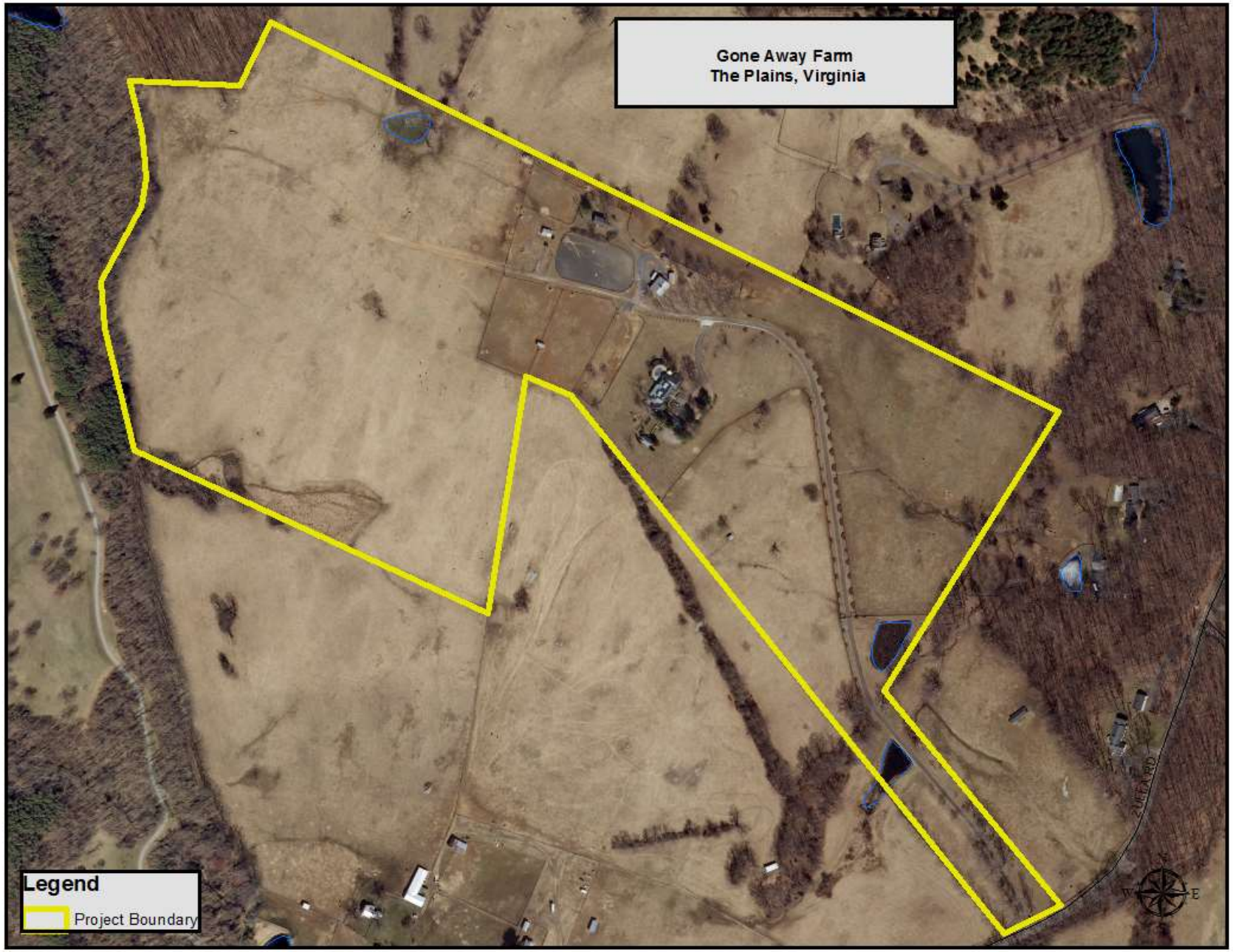
2017 Conservation Contractor Award

John Marshall Soil and Water Conservation District
2017 Annual Awards Luncheon

John Marshall SWCD's

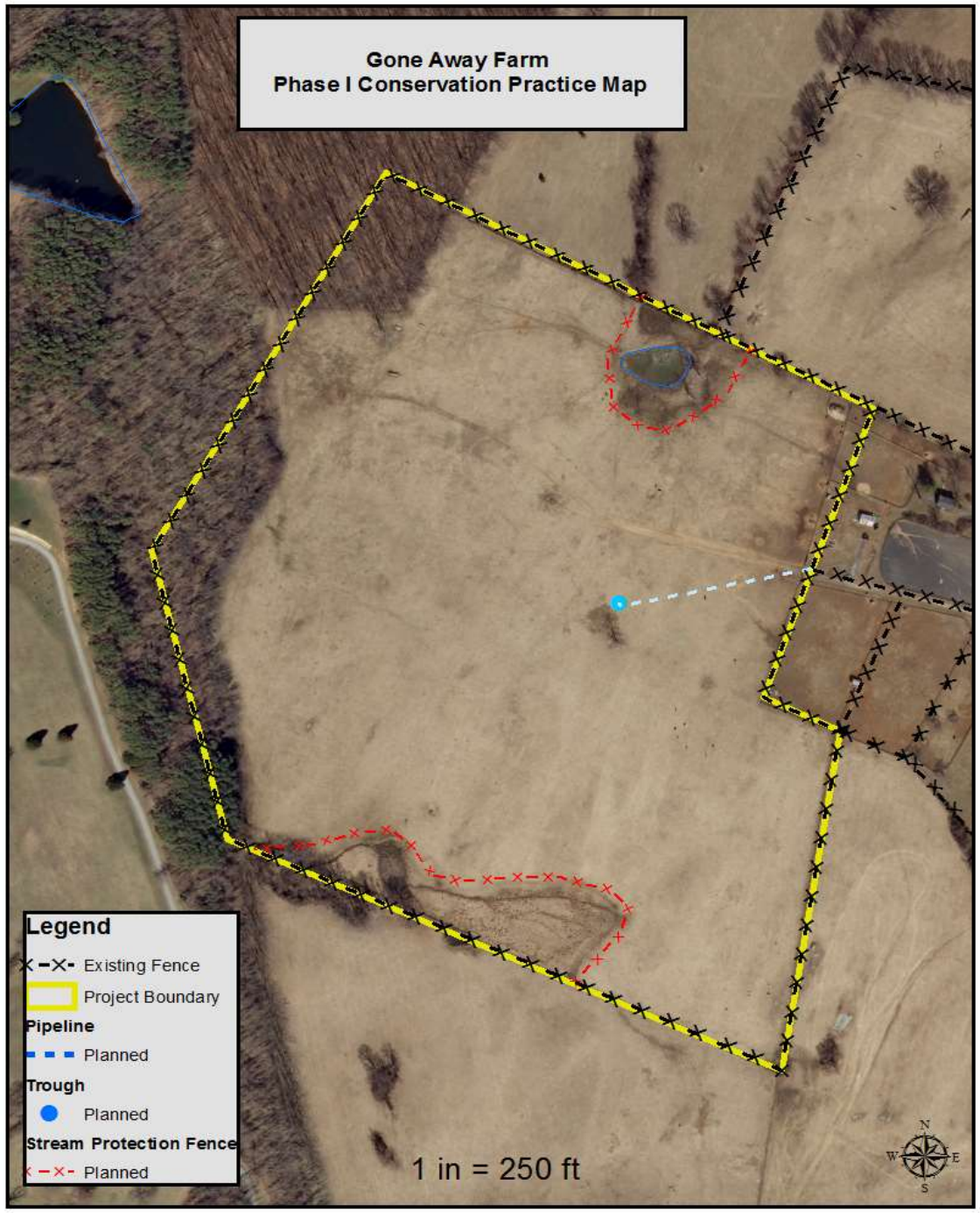
2017 Conservation Farm Award

Gone Away Farm
The Plains, VA
Owned and Operated by
Susan and Stanton Sloane



- Gone Away Farm Encompases about 84 acres of Pasture Located in the Cromwell's Run Watershed
- The Land has been Placed Under Conservation Easement Through the Virginia Outdoors Foundation

- The Sloane's raise approximately 25 cows
- Scottish Highland/Angus crosses
- Their goal is to sell humanely handled, natural, grass fed beef



In 2014 Gone Away Farm Installed Their First Gazing Land Protection Practice

Addressing 34 Acres of Pasture

This Plan Included

- Fencing off Two Ponds
- Developing an alternative Water Source for the animals

To provide clean water for livestock, the farm installed one frost proof trough and 375 feet of pressure pipeline off of their existing water system.

To protect local surface waters, the farm installed 1,600 feet of stream protection fence around two ponds creating 1 acre of riparian buffer.

In 2015 Gone Away Farm Installed Their Second Gazing Land Protection Practice

Addressing 13 Acres of Pasture

This Plan Included:

- Fencing off A Spring Fed Stream
- Developing another alternative Water Source for the animals
- Installing One Stream Crossing to Facilitate Movement Between Fields

To provide clean water for the livestock, the farm installed a “double” Spring Development

Both of which gravity fed through 480 feet of pipe to one large concrete trough

To protect local water quality, the farm installed 1,350 feet of stream fence creating 1 acre of riparian buffer and protecting 1,200 feet of stream bank

This Crossing Facilitated the Movement of Animals Between Fields and Through the Buffer Area

Before the Conservation Practice

Just After Completion of the Practice

Combining Environmental Education with Community Service

Partnership Achieves the Best Results !

Gone Away Farm
Conservation Accomplishments

- Built 2,950 feet of Stream Protection Fence
- Installed 395 Feet of Pipe and One Frost Proof Trough
- Two spring developments, 480 feet of Pipe, and one Gravity Trough
- Built One stream crossing
- Collaborated to Plant 1 acre of Native Hardwood Buffer

These Efforts Protected ½ mile of Stream Bank and two acres of Riparian Buffer

JOHN MARSHALL SWCD

recognizes

Gone Away Farm

for their outstanding conservation
and land stewardship.

Congratulations!

2017 Conservation Farm Award

John Marshall Soil and Water Conservation District
2017 Annual Awards Luncheon

John Marshall SWCD's 2017 Clean Water Farm Award

Daron L. Culbertson
Willingham Farm
Remington, VA

VA DCR 2017 Rappahannock River Basin Grand Winner

Marsh Run on Willingham Farm, 1 mile from confluence with Rappahannock River

A Neighborhood Tradition…

2015 TMDL Conservation Farm Award
Daron Culbertson
Willingham Farm

2013 Rappahannock Basin Grand Winner
Carla & Claude Chapman
Chapman Farm

2014 Rappahannock Basin Grand Winner
Marshfield Farms
Frank Ott

A History of Strong Support for Conservation in Southern Fauquier County – Lower Marsh Run Watershed

A Family Tradition…

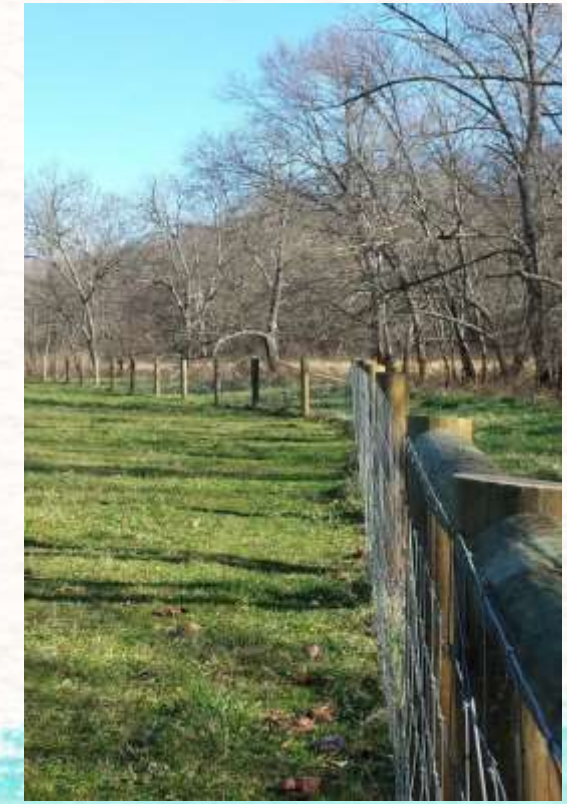
Daron's grandfather, Alton Willingham, raised Polled Herefords in southern Fauquier County for over 50 years, and was a charter member of VA Hereford Association. His family farm on Remington Road had been in Alton's family since the 1800's. Daron continues to raise Hereford breeding stock as well as run a commercial cow-calf operation.

A Tale of Two Farms…

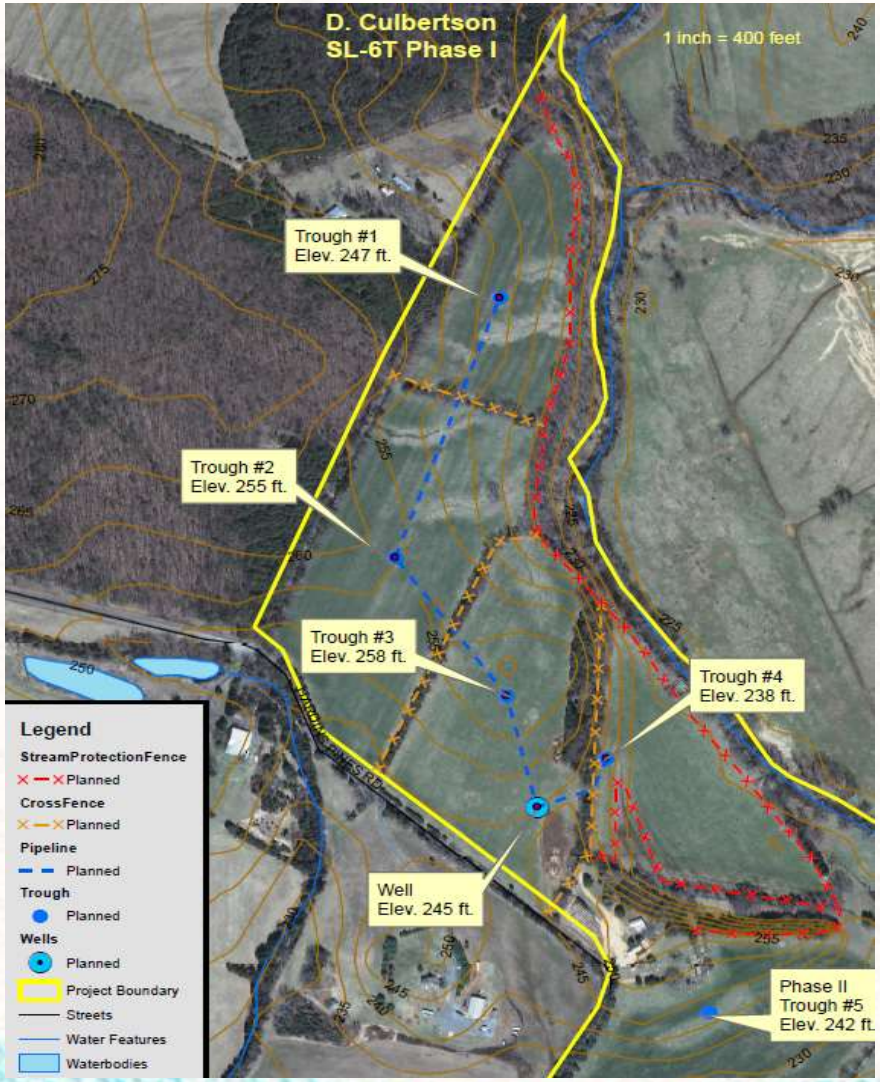
Over time, Mr. Willingham acquired a second farm between Remington and Sumerduck, as well as adjoining tracts at both properties for a total of 400 acres of pasture, hay land and forest. The "new" farm has nearly two miles of frontage on Marsh Run, approximately one mile upstream of its confluence with the Rappahannock River which makes its exceptionally scenic, but subject to frequent flooding. Upon his grandfather's passing five years ago, Daron, like many second and third generation farmers, was faced with the challenges of keeping the land in profitable agricultural production.

WIN-WIN Situation:

From 2014-2017, through a series of Stream Exclusion and Grazing Land Management (SL-6/SL-6T) practices on both farms, Daron protected a total of 18,500 feet (3.5 miles) of streambank. With completion of the final phase early this year, all water resources under the family's ownership were protected. Through the installation of cross fence, stream crossings, and improved forage management, Daron's cow/calf operation has grown from 50 to 70 pairs.



Three Stream Exclusion Practices at the farm on Marsh Run



Two Stream Exclusion Practices at Remington Rd Farm

Craig's Run – Upper Marsh Run Watershed

Willingham Farm's Conservation Practices Created 26 Acres of Riparian Buffer

that protects the streams as well as an extensive series of wet meadows, springs, and small drainages, which provide habitat for migratory songbirds, Bald Eagles, mink, and other aquatic species. After realizing so many benefits to his operation, Daron readily promotes conservation practices in the agricultural community and has brought new participants to the program.

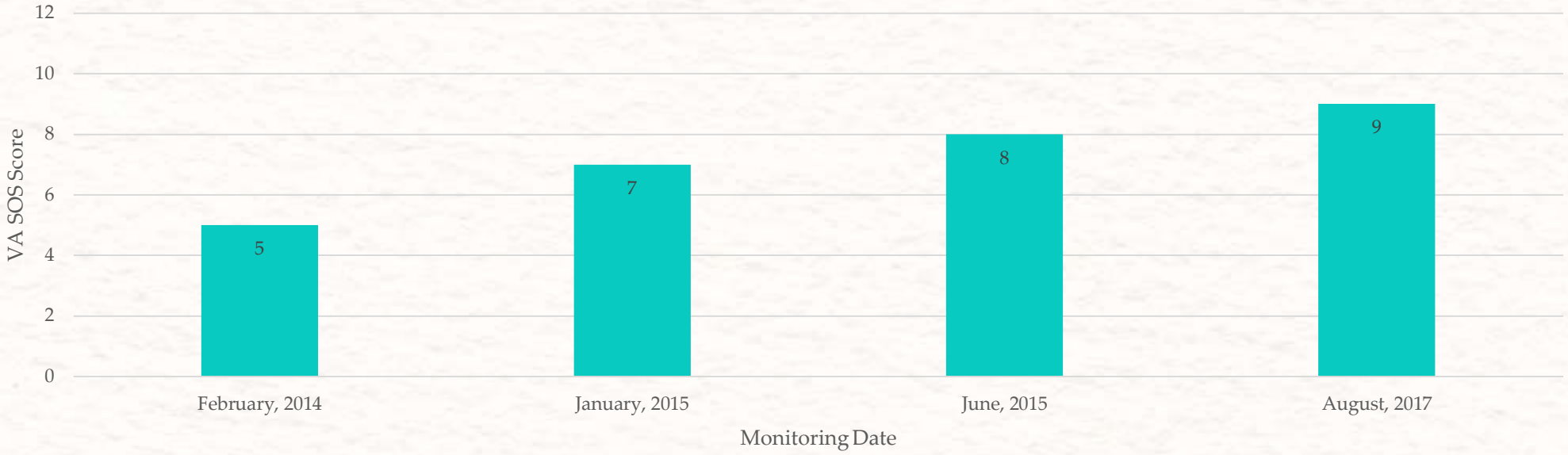
Support to Education and Stewardship

Liberty High School students and volunteers planted one acre of native hardwood seedlings in the Marsh Run buffer in April 2015.

Friends of the Rappahannock and JMSWCD Staff and volunteers planted 1.5 acres of native hardwood seedlings in the Craig Run buffer in April 2016.

JMSWCD staff and volunteers continue to monitor water quality and biodiversity at Willingham Farm.

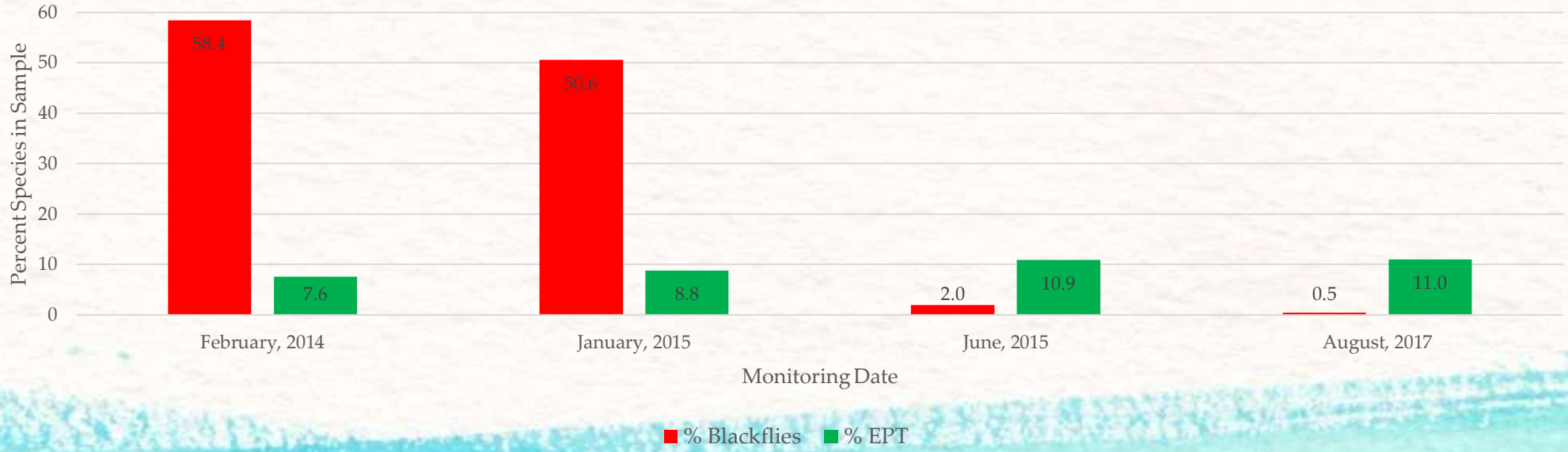
Positive Water Quality Trends Observed on Willingham Farm



Scores for the Virginia Save Our Streams metric are rated in the following way:

0-7: Unacceptable Ecological Condition
8: Gray Zone
9-12: Acceptable Ecological Condition

Selected Species Comparison



Change in the percent of pollution tolerant blackflies in the sample and change in the percent of species from the pollution intolerant EPT families Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies)

JOHN MARSHALL SWCD

recognizes

Daron Culbertson
of Willingham Farm

for his outstanding conservation efforts.

Congratulations!

2017 Clean Water Farm Award

John Marshall Soil and Water Conservation District
2017 Annual Awards Luncheon